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Seed and Plant Introduction and Distribution,

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ALFALFA (*Medicago sativa*).

[Instructions adapted to New York and the New England States.]

Description.—Alfalfa is an upright smooth, perennial, leguminous forage plant. It occupies the same place in the agriculture of the West that clover does in the East. Alfalfa is to be preferred to red clover in the eastern sections of the country wherever it can be successfully grown. The reason for this is that pound for pound the hay is much better feed than clover, and three good hay crops may usually be procured each season. This crop lends itself readily to soiling purposes, as it quickly recovers and resumes growth after cutting. It is better adapted for this purpose than it is for pasturage. Since it is a perennial, it will last for a number of years.

Soil requirements.—A deep, fertile, well-drained, nonacid soil, reasonably free from weeds, is required. The long taproots demand a deep permeable soil. The inability of the plants to withstand poor drainage makes it necessary to provide soil naturally well drained. Alfalfa will fail if sown on soil of low fertility or one deficient in lime. Probably no other field crop requires lime to such an extent as does alfalfa. With the possible exception of limestone regions, all soils in this area may be safely considered to require liming for alfalfa. Even in limestone regions, liming is often necessary. At least a ton of lime to the acre is required, and more than this may be necessary on the heavier soils. Well-rotted barnyard manure is the most satisfactory fertilizer. If this is not available, a liberal application of commercial fertilizer should be made. This should be reasonably rich in potash and phosphoric acid, but may be poor in nitrogen.

Preparation of the soil.—The soil should be well settled, but finely pulverized on top. To allow for the necessary settling, at least six weeks should intervene between the time of plowing and that of seeding. Frequent harrowings to settle the ground should be given after plowing and before seeding. This will produce the necessary fine tilth and destroy the weed seedlings as they start.

Inoculation.—Inoculating with nitrogen-fixing bacteria is essential unless the soil is known to be naturally supplied with these germs. This may be accomplished either by the use of artificial cultures or with soil from an old alfalfa field. If the artificial culture is used, the seed should be inoculated shortly before planting. If soil from an old alfalfa field is used instead of the artificial culture, it is essential that the soil be taken from around plants which are well supplied with nodules or tubercles. The soil should be broadcasted at the rate of from 200 to 500 pounds per acre and harrowed in immediately. The spreading should take place on a cloudy day, if possible, or in the late afternoon, as the sun's rays are destructive to the germs. Care should be taken to avoid introducing with the soil noxious weeds and fungous diseases. Soil from the roots of sweet clover will also inoculate alfalfa. This should be applied as suggested for soil from an old alfalfa field.

Seeding.—The seed should be sown alone at the rate of 20 to 30 pounds per acre. It may be drilled or sown broadcast and covered lightly with a smoothing harrow. A much more even stand can be secured by seeding one half the seed north and south and the other half east and west. If sown in the spring, the soil can not usually be put in proper condition and become sufficiently warm before the last of May or the middle of June. If weeds threaten to prove troublesome, it may be necessary to harrow the plowed ground repeatedly until midsummer or later in order to destroy the successive crops of weeds as they germinate. The seed can then be sown and plants still attain a considerable size before winter. Alfalfa is more likely to winterkill under this last method of sowing, but this danger may be less than that of the weeds when sown in the spring. This is especially true if the ground is foul with seeds of noxious weeds. For this reason it is usually advisable to sow alfalfa upon land which has been in clean-cultivated crops for a number of years.

Treatment of the stand.—Unless the weeds threaten to choke out the young plants they should not be clipped until 12 or 15 inches high and are beginning to bloom. The cutter bar of the mower should be set high, as the alfalfa is likely to be choked out by weeds if cut low. If the first cutting is light, it may be left on the land as a mulch. If heavy enough to smother the alfalfa plants, it should be removed. Under no circumstances should the field be pastured during the first two years, and even an old field had best be pastured sparingly. If green feed is desired, soiling is the best practice.

Need of experimenting.—In most parts of New York and the New England States alfalfa growing is still in the experimental stage. The data at hand indicate that there is, perhaps, no other crop so rigid in its requirements of soil and treatment. Failure to provide any one of the indicated requirements usually means failure. For this reason one's first attempts should be limited to a comparatively small area. It is often necessary to make several failures with alfalfa before its requirements are thoroughly understood. This means a loss of several years' time unless a definite experiment is carried out the first season. Divide the area selected into a number of subdivisions and give each a different treatment, especially as regards the quality of lime and fertilizer used. By watching the effect of these different treatments the experience which would otherwise require several seasons to procure can be obtained at the end of the first year. The treatment given the subdivision showing the best results can be applied to a larger area the succeeding season. The successful plots will clearly show what it is necessary to do to produce a successful stand. The plots that prove a failure will show just as clearly what not to do. A rough diagram of the experimental plots should be made when they are laid out. The treatment given each should be carefully recorded and further notes made from time to time as to the success of the different methods of treatment. This will enable one to refer to the work at any future time. The results should be made available to all interested neighbors.

